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ABSTRACT

This paper presents criteria for a reading program for Native American children based on the theory that these children have learning styles grounded in right hemisphere (brain) dominance. To test this theory the Wechsler Intelligence Scale for Children-Revised was administered to 197 Native American children. Test results are interpreted to indicate a pattern reflecting greater strength in right hemisphere processing. The author concludes that lower reading scores of Native American children may be due, in part, to a mismatch between a right hemisphere learning style and a left hemisphere instructional approach. The paper recommends that reading programs for Native American children employ whole-brain learning techniques; visual, auditory, and kinesthetic models for language and thinking; rhythmic and dramatic play; and a holistic method of instruction that recognizes the language, culture, and learning styles that Native American children bring to school. (CS)

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Whole Language -
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Increasing evidence suggests that cultural background influences not only what a child has already learned when he comes to school, but also how he goes about learning after s/he gets there. Many Indian children may have developed a learning style that is quite different from that of non-Indian students. Teachers need to understand how cultural influences can affect the learning styles of Native American children and how they can broaden their teaching to meet the needs of children with a range of learning styles.

In this paper, I will offer some supporting evidence to the proposition that relative strength in right hemisphere information processing is characteristic of Native American learning style. Secondly, I will suggest how teachers can apply their understanding of Native American learning style to make learning to read a success experience for more Native American children.

Understanding human learning has presented a difficult challenge to psychologists because learning is a process that occurs inside the human brain - hidden from view. Unable to observe the process directly, they have had to depend on observations of what happens after learning has taken place. In other words, we have been able to see what a child learns but we could only infer about how he goes about learning it. Recently, however, utilizing advanced techniques for observing the functioning of the brain, researchers have added considerably to our understanding of human learning (Bogen, 1985; Gassaniga, 1975; Levy, 1983; Ornstein, 1978). Apparently each of the hemispheres of the brain makes its own unique contribution to the process of learning. The left hemisphere specializes in linear, sequential information processing and abstract thinking. The

right hemisphere specializes in relational, simultaneous information processing and holistic thinking. Learning anything beyond the most elementary task requires the cooperation of both hemispheres. However, some tasks apparently require more of the specialized functioning of one or the other. For example, music and artistic tasks utilize more right hemisphere functioning and language, especially the English language, depend more heavily on left hemisphere processes.

Presented with a problem or task, a person doesn't automatically approach it with the kind of processing that will accomplish the task most effectively. Instead, preconscious selection determines which hemisphere's strategies are put into operation. This hemispheric preference is the basis for a child's individual learning style. A child who activates predominantly right hemisphere processing strategies is said to have a right hemisphere dominant learning style.

Researchers have suggested that hemispheric preference is influenced by cultural background. Entire cultures, by emphasizing particular beliefs and activities, encourage the development of one hemisphere to a greater extent than the other (Ornstein, 1972). The values and practices of the majority culture suggest that left hemisphere processing is preferred. Native Americans, on the other hand, have studied the issue and concluded that their culture is based on right hemisphere dominance (Cattey, 1980; Ross, 1982).

At this time, determining hemispheric preference requires brain scan techniques in a laboratory setting. Tests that can appropriately be used in educational settings have not yet been developed. However, it seemed to me that such cognitive differences might be reflected in patterns of scores on existing tests of cognitive development. To test my hypo-

theses, I explored the scores of 197 Native American children on the Wechsler Intelligence Scale for Children - Revised (WISC-R) (Browne, 1984). My study revealed a characteristic pattern quite different from that of the standardization population. Analysis of subtest specificity, means profiles, subtest scatter and factor structure suggested that the pattern reflects greater strength in right hemisphere processing. The study results, then, support the conclusions of students of the culture such as Ross and Cattey that the Native American culture is based on a preference for right hemisphere processing.

A Native American child may come to school with a right hemisphere dominant learning style because he has spent his early years in a culture which emphasizes the use of right hemisphere thinking. However, there are other not necessarily culture-based influences on hemispheric learning style. Both maturation of the brain and parenting style may in some cases make an impact. Maturation may influence which hemisphere a child brings into play. When a child is born he is operationally "right-brained," because the corpus callosum, the fiber connecting link which allows communication between the hemispheres of the brain does not begin to be functional until a child is about two. As the corpus callosum matures, allowing integration of information of both hemispheres, the left hemisphere begins to play a larger role. This ongoing maturation process continues until puberty, and it appears likely that many first graders may not have developed callosum maturity to a point where consistent access to the left hemisphere is possible. For all practical purposes they are "right-brained" at this point though they may develop very efficient use of left hemisphere processing in time.

Other children may be "right-brained" because they have not been

exposed by parents to life experiences which encourage the use of left hemisphere processes. As we have learned from Piaget's work, cognitive functioning develops as children interact with their environment, and it is the parent who generally controls the activities which engage a young child's time and attention. If the interaction between parent and child involves much use of language (left hemisphere) and if the parent emphasizes such activities as counting, listening to stories, memorizing nursery rhymes, etc. the child is provided with optimum opportunity to develop skill with left hemisphere strategies. It seems very possible that some children may come to school with relative strength in the right hemisphere simply because they have not had the opportunity to develop the left.

Any one or a combination of these influences (culture, maturation, parenting style) may be operating to cause many Native American children to enter school with right hemisphere dominant learning styles. To attempt to determine the source of a child's hemispheric preference is not as important as determining how to create an educational environment where he can use those right hemisphere strengths to develop the skills that schools are designed to teach.

In most schools in this country, the linear, sequential processes of the left hemisphere dominate the curriculum and instructional methodology. It is not surprising, then, that right hemisphere dominant children are experiencing such a struggle to succeed. In the case of children from a right hemisphere culture, hemispheric preference has a broad impact on all kinds of learning. It creates a characteristic "right-brain" way of relating to all of life, affecting a wide range of behaviors. Consequently, when we consider ways to make learning in school more effective for children with right hemisphere learning styles, we need to consider

differences in language style, interpersonal interaction style and cognitive style.

Considering these issues, I began my own search for understanding how reading curriculum and methodology might be modified for right hemisphere dominant learners. Careful study of the research on the roles of each hemisphere in language and reading together with ongoing study of traditional Indian culture and informal observation of classrooms, and visits with teachers of Indian children have resulted in establishing several criteria for a reading program which should be more appropriate for right hemisphere dominant Indian children. It is my belief that they constitute a framework from which we can begin to bridge the distance between neurological research and cultural background. These criteria were based on the following five working assumptions:

1. A majority of Native American children probably have right hemisphere dominant learning styles. We can't assume that all Native Americans will show a preference for right hemisphere processing. Also, we can expect to find some non-Indian children who have right hemisphere dominant learning styles. And some children from both cultural groups probably won't demonstrate a marked preference for either left or right-hemisphere processing.
2. Lower achievement levels of Native American children may be explained in part by difficulty with reading in the primary grades. Certainly there are other influences that have a depressing effect on achievement scores. But the impact of reading ability on achievement in other areas has been well documented.

3. Lower reading scores of Native American children can be attributed in part to a mismatch between learning style and instructional approach to reading. Most current approaches to teaching reading depend heavily on early emphasis on the use of phonics. Such methods demand the linear, sequential, logical processing of the left hemisphere, insisting that the right hemisphere dominant child use cognitive strategies that are either not well developed or are not natural or automatically brought into play.
4. Any instructional approach intended for right hemisphere dominant learners should have the potential for being adapted to fit any learning style. At this point we cannot objectively assess learning styles with any degree of reliability. And even if we could, we do not want to dichotomize learning style and label children as "right-brain" or "left-brain." Such labeling would cause teachers to limit children's cognitive development by locking them in to the expectations that the label implies.
5. Any instructional approach should offer a learning environment which will encourage children to develop the processing of both hemispheres. Cultures may "specialize" hemispheric functioning, and through that specialization develop unique contributions to humanity as a whole. However, creative problem solving in any culture requires the use of both hemispheres.

Operating on these five assumptions, then, I have developed ten criteria for a reading program that would allow any Indian child to succeed at learning to read, irregardless of his or her hemispheric preference. The criteria are as follows:

1. The program must be broad enough to allow whole brain learning

from the beginning of instruction. Teaching techniques should be varied. At times new material should be presented in such a manner that a right hemisphere learner can most effectively organize and assimilate new meaning. At other times material can be presented in a linear, sequential manner. Teacher observation will quickly identify a child's most effective kind of technique. To enhance success, new learning material should be introduced in a manner that allows a child to use predominantly his or her preferred hemisphere. However, subsequent lessons on the same skill should bring the weaker hemisphere into play to give the child experience in using strategies with which s/he is less comfortable.

2. The program must recognize that children come to school with already developed strategies for learning about language. It must allow children to continue learning language in a natural way, much like they have already begun to learn.
3. The teaching of specific skills must be accomplished at a time when the child needs them to continue the flow of his learning. The holistic learner depends on a continuous flow of experience that has its beginning in direct experience. When that flow is interrupted by skills teaching that is unrelated to it, the learning is fractionated and rendered incoherent to the student.
4. The teaching of abstract skills must be accomplished with techniques that present all of the pieces simultaneously so that the relational processes can be used to organize the meaning of the whole. When pieces are presented sequentially and the child is asked to build meaning of the whole by accumulating meaning in a

linear manner, the right hemisphere dominant child has difficulty.

5. Teaching strategies should depend heavily on providing models for language and thinking. Such models may be visual, auditory, or kinesthetic in nature. Or better yet, a combination of these. Right hemisphere relational thinking may depend heavily on comparison to existing models to guide the expansion and refining of their use of language.
6. A reading program for right hemisphere dominant learners should make much use of rhythm and dramatic play associated with language. The holistic learner intakes messages most effectively with his or her entire body.
7. Graphophonic, syntactic and semantic cueing systems of language should be presented together, rather than separately. The holistic, relational learner can more easily select the balance between these kinds of reading cues that is most functional for him or her. When the graphophonic cueing system is presented first, the right hemisphere dominant learner is forced to attempt to use decoding strategies that are probably the least effective.
8. All of the uses for language - reading, writing, speaking and listening - should be developed together in an interrelated manner. This holistic approach to the learning of language use allows the child to see relationships between them and to assimilate the general principles they all share.
9. A reading program should provide for a functional setting where the child can learn reading and the other language arts through using them in personally meaningful activities.
10. A program should depend on strategies and techniques which accept

the child's cultural and experiential background by allowing the child to begin with his or her own language and to organize meaning in unique and individual ways.

Until research provides us with more explicit details, these ten criteria can provide teachers with direction for selecting and modifying reading programs to meet the needs of right hemisphere dominant Indian children. As I stated earlier, the goal is not to devise a reading program uniquely for right hemisphere dominant learners. Rather, teachers' understanding of their needs should be understood and accommodated within a program for all children.

My first thought was that, since traditional beginning reading programs appear to rely heavily on left hemisphere processing, it would be necessary to conceptualize an entire new approach to reading that would allow children to apply right as well as left hemisphere strategies to learning reading. However, after close inspection of existing approaches, one approach appears to be broad enough in its conceptionalization to encompass the ten points above. Drs. Kenneth and Yetta Goodman from the University of Arizona have developed an approach they refer to as a whole-language approach (1981). The approach is based on extensive research and theory of language development, language processes and language learning, including research on reading and writing. The Goodmans term their approach a "holistic" approach which regards reading and writing as a natural extension of human language development. The approach is positive, building on existing strengths and experiences of children within their own cultures. Reading instruction begins with whatever language base the child brings to school. The teacher provides a language-rich environment and acts as guide and facilitator as children

expand their language learning. There is no isolation of skills for instruction. (However, it is expected that readers do form a set of generalizations for relating speech to print as they are reading meaningful texts.) Processes are not isolated from their use. Instead they are learned as children use language in meaningful situations. The program is based on the assumption that learning goes from whole to part, from familiar to unfamiliar, from vague to precise, from gross to fine and from highly contextualized to more abstract. The Goodmans suggest that an instructional program must take place in an environment where the students feel acceptance and respect for their language, culture and learning style. A complete review of the whole language approach is not within the scope of this paper. The reader may wish to refer to Reference Item #5 for a more complete description of the approach.

Whole Language Approach is intended for all children. It provides a conceptual framework within which teachers can guide the learning of children from a variety of cultural backgrounds and learning styles. For this reason, it seems the most reasonable beginning point for teachers who are especially concerned with right hemisphere dominant Indian students. The Goodmans make no specific reference to children with right hemisphere dominant learning styles. However, it seems clear to this author that the ten criteria offered earlier could easily be met within a whole language framework.

It is my belief that if elementary teachers apply these ten criteria to their beginning reading programs they will begin to see a change in Indian children's achievement patterns in reading. By helping these children to experience success in the first two years of reading, they will have given them a firm base for continuing success in school. If

teachers at every level will continue to work toward understanding the strengths, as well as the needs, of the right hemisphere dominant learner, we will soon begin to see a reversal in the tendency for many Native American students to fall further behind on achievement tests each year that has been the trend in the past.

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